

## **REMARKS**

### **Claim Rejections Under 35 USC § 103**

Claims 1, 4, 5, 7, 9, 22 and 23 are rejected as allegedly unpatentable over Bickford in view of Kaida.

Bickford describes a process for stabilizing organics-containing waste materials, which includes electronic components generically, and recovering metals therefrom. See the abstract, for example.

The metals of interest for recovery are explicitly disclosed to be noble metals. See, for example, column 4, lines 25-26. In order to be able to separate and recover the noble metals from the rest of the materials, including from other metals, metal oxides are added to buffer the redox potential of the melt, see, e.g., column 5, lines 6-24, and thereby the noble metals would be reduced to the metallic state while other metals would remain in a dissolved state in the melt. See, for example, column 4, lines 20-23, column 7, lines 48-55 and column 8, lines 19-23. These separated noble metals then are recovered at the bottom of the melter, see column 8, lines 29-30, and the remaining melt, which includes other metals, is allowed to form a stable glass product, see column 8, lines 31-40.

The Office Action cites Kaida, which discloses the disposal of LCD panels which includes heat treatment to form a melt. As alleged by the Office Action, LCDs in Kaida are disclosed to contain indium tin oxide, chromium metals, tantalum, aluminum or titanium. However, none of these metals are noble metals what would be desirable for recovery in the method disclosed by Bickford. As such, one of ordinary skill in the art would not have selected LCDs for the treatment process of Bickford where a primary objective is to recover noble metals from the waste.

The only possibly relevant teaching in Kaida is that LCDs need to be disposed of and that one approach is to melt them. However, such a generic reason is not an adequate reason to one of ordinary skill in the art to consider LCDs as a potentially good fit for the specific process of Bickford, especially in this case where one of the main objectives of Bickford (recovery of noble metals) would not be, based on the disclosures of these references, apparently furthered by the combination since no such metals are disclosed to be present in the LCDs according to Kaida.

Additionally noted is that in Bickford, the way to achieve separation of the desired noble metals from the rest of the metals is by adjusting the reduction potential of the melt by

the use of metal oxides. See especially column 5, lines 2-17 and column 2, lines 21-23. Nowhere is it disclosed that by merely adding LCDs to the waste materials, the noble metals would separate from the rest of the metals. Therefore, such an effect is totally unexpected from the disclosures of the references, and the step of adding metal oxides may be eliminated, which is also not obvious from the disclosures of the references. See, especially new claims 24 and 25 using the terminology “consisting essentially of” and “consisting of.”

Also noted is that not all recited steps of the claimed process are even alleged to be disclosed or obvious from the disclosures of these references. For example, none of these references teaches or suggests that the cooled melt should be broken and that the part of the cooled melt that is enriched in the noble metals should be thereafter separated from the remaining part of the cooled melt. Instead, Bickford teaches, as alleged by the Office Action, that the metals of interest are collected at the bottom of the melter and the metals may be drawn off and processed for re-use. Thereafter, the remainder of the melt forms a stable glass product. See column 8, lines 29-33. As such, a breaking of the cooled melt is not taught or suggested by Bickford, and no allegation in the Office Action even addresses this deficiency.

For at least the above reasons, claim 1 and the dependent claims of claim 1 are not obvious.

Nevertheless, the following brief comments are made with regard to claim 23 and new claim 26. The Office Action alleges that one of ordinary skill in the art would have been motivated to determine the optimal concentration of LCDs within prior art conditions. However, there is no basis for such an allegation. Nothing in either reference provides any reason for selecting or trying various amounts of LCDs and no consideration or parameter related to “prior art conditions” is provided for optimization. The mere broad allegation reciting “prior art conditions” without an identification of even one specific prior art condition is inadequate for the USPTO to carry its burden in establishing obviousness. Moreover, the optimal concentration based on the disclosures of the references is zero amount of LCDs.

Claims 10-12 are rejected as allegedly unpatentable over Kaida in view of Gaedcke.

Kaida as discussed above teaches the melting of LCDs. Such is achieved in a nonferrous smelting furnace. See abstract, for example. Nowhere is a rotary-tube furnace taught or suggested. Gaedcke merely discloses the existence of such a furnace. The use of

such a furnace is disclosed to be advantageous for preparing inorganic or ceramic pigments. See, e.g., column 1, lines 5-6. Rotary-tube furnaces are disclosed to not have the disadvantages of other furnaces of producing a “consistent quality of product, since it is virtually impossible to obtain a uniform temperature over the entire layer thickness.” See column 1, lines 35-42.

One of ordinary skill in the art of melting a waste product of LCDs to dispose of the same however has no reason to use a furnace that has as its main advantage of producing a consistent quality product. The product in the Kaida case is to be disposed of because it is a waste product and its quality is of no importance. There is no reason for the waste product of Kaida to obtain a uniform temperature (column 1, lines 36-37), or a uniform homogeneity (see column 2, line 15) or uniform calcination (see column 2, line 20). These are simply not advantages even remotely relevant to the process of Kaida dealing with the melting of a waste that is to be disposed.

As clearly provided in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007), there has to be an apparent reason to combine known elements in manner claimed in a patent in suit. And that has to be “a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does.” See *KSR*. Merely identifying an advantage of a furnace disclosed in a secondary reference that has no relevance to the process of the primary reference is not such a reason that would have prompted an artisan to make the alleged combination. As such, the rejection must be withdrawn in view of the clear guidance provided by *KSR*.

Moreover, the thermal treatment of LCDs in a rotary-tube furnace at a temperature of 1100-1300° results in the formation of a protective film on the chamotte lining. In this way, it is possible to employ LCDs in rotary-tube furnaces as replacement materials for purchased silicate-containing products, such as, e.g., furnace sand, as disclosed in the specification on page 10, lines 5-9. This is an unexpected result not obvious from the disclosures of the cited references, and further supports the patentability of the claimed invention.

Claim 21 is rejected as allegedly unpatenable over Bickford in view of Kaida and in further view of Gefvert.

For at least the reasons discussed regarding the combination of Bickford and Kaida, this rejection cannot stand either.

Nevertheless, the following brief comments are provided.

The primary reference deals with the recycling of electronic components, for example, and secondary references deal with recycling of LCDs. The newly added reference to Gefvert deals with a completely different process that extracts precious metals with a solvent. As disclosed in the specification, this requires the chelation of the noble metal, the scrubbing thereof from an organic phase and then the stripping with acidified thiourea solution. The noble metal may be extracted from various sources, one of which is an ore. This process has nothing to do with the claimed process or any of the other cited references.

Nothing in the disclosure of any of the references or otherwise provides a reason to one of ordinary skill in the art to consider the use of an ore in the process of Bickford. For example, nothing in Gefvert indicates that from the gold ore (the type of ore disclosed in Gefvert – see column 3, line 47) there is a reason to separate noble and non-noble metals from each other, which is a primary consideration in Bickford. As such, one of ordinary skill in the art would not have a reason to change the organics containing waste materials in Bickford to that of an ore. Also, nothing in any of the references provides support for an allegation that the gold ore would have been a suitable substituent for an organics containing waste material. These are highly different types of materials with different characteristics. Additionally, there is also no reason for one of ordinary skill in the art to consider the addition of a gold ore to the waste material of Bickford instead of the total substitution thereof. In that scenario, the question would arise as to why would one of ordinary skill in the art add a gold ore (the type of ore disclosed in Gefvert) to a waste stream that contains various other metals and contaminants, thereafter to only try to separate the gold from the rest of the waste product and other metals.

Reconsideration is respectfully and courteously requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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